Department of Energy



ŘOČKY FLATS FIELD OFFIČE P.O. BOX 928 GOLDEN, COLORADO 80402-0928

APR 8 1999

99-DOE-03321

Mr. Tim Rehder Rocky Flats Project Manager U.S. Environmental Protection Agency, Region VIII 999 18th Street, Suite 500, 8EPR-F Denver, Colorado 80202-2466

Dear Mr. Rehder:

Enclosed please find the *Quarterly Report for the Mound Site Plume Treatment Project* for your information. This report covers the activity and available data for the quarter from January 1, 1999 through March 31,1999. There are no safety issues for this reporting period.

If you should have any questions related to this report, please contact Norma I. Castaneda at (303) 966-4226 or contact me at (303) 966-5918.

Sincerely,

Joseph A. Legate Assistant Manager

for Environment and Infrastructure

Enclosure

cc w/Enc:

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- G. Kleeman, EPA
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QUARTERLY REPORT FOR THE MOUND SITE PLUME TREATMENT PROJECT

January Through March 1999

March 30, 1999

INTRODUCTION

The Mound Site Plume Treatment System collects and treats the contaminated groundwater plume derived from the Mound Site to the Groundwater Action Level Framework Tier II level concentrations defined in the Rocky Flats Cleanup Agreement (RFCA) (DOE, 1996), and demonstrates the feasibility of using this system on other contaminated groundwater plumes. The components of the Mound Site Plume System are shown on Figure 1.

The Mound Site Plume Treatment Project was a cooperative effort between RFETS and the Department of Energy Subsurface Contaminant Focus Area (EM-50), with support from the US Environmental Protection Agency (EPA) SITE Program. The Mound Site Plume Treatment Project employs innovative technology for the collection and treatment of contaminated groundwater containing chlorinated organic contamination and low levels of radionuclides.

This report covers the activity and available data for the quarter from January 1, 1999 to March 31, 1999. Included in this report are the analytical results for samples collected in the previous quarter, but which were not available in time to be included in the last quarterly report. There are no safety issues for this reporting period.

PROJECT EVENTS

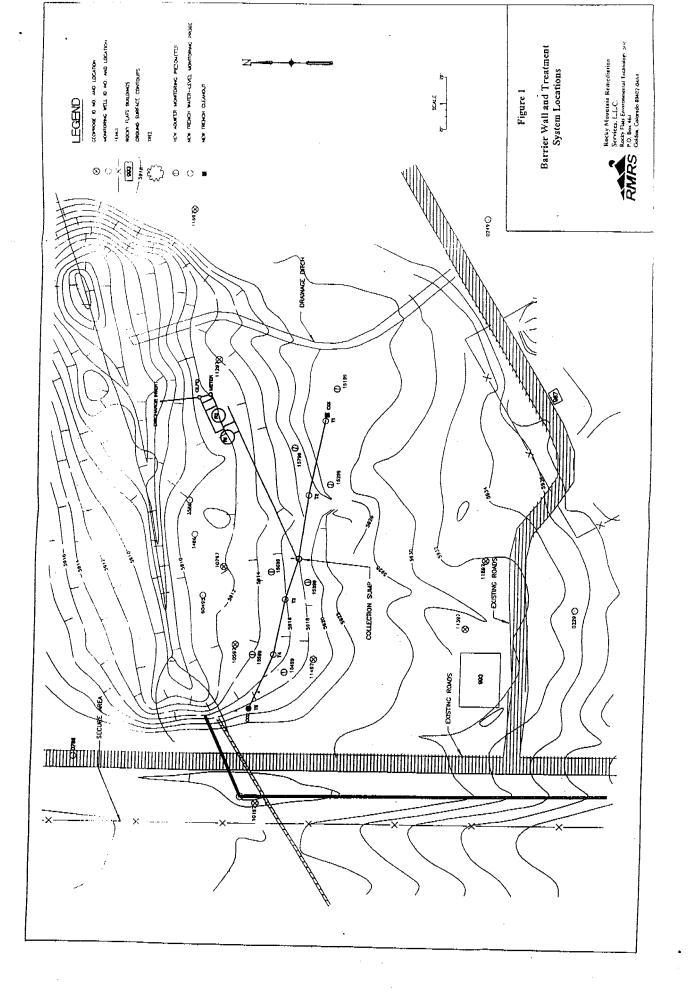
Raking of the iron in the two treatment cells continues along with water level monitoring, and sample collection by the EPA SITE Program (performed by TetraTech). Each of the two treatment cells contains 8 feet of iron filings that act as the treatment medium for the contaminated water. The surface of the iron filings requires regular raking to prevent formation of a crust. The crust continues to form and requires mechanical disruption in Reactor Cell 1. No crust has been observed in Reactor Cell 2. The piezometers for monitoring upgradient and downgradient water levels were installed during this quarter. Installation of these 7 piezometers was completed on January 7, 1999.

TREATMENT EFFECTIVENESS

Flow rates from the treatment system for the December-March period are shown on Figure 2. The higher flow rates in late December correspond to a storm event; the steadily increasing flow rates correspond to the beginning of the wet season.

Water levels within the collection trench are monitored by 5 piezometers (P1 through P5). Locations are shown on Figure 1 with the results shown in Table 1. These data indicate that the east side of the collection trench is dry, as was anticipated. This side of the plume was believed to be dry prior to installation of the collection system. Water levels from the piezometers up- and downgradient of the collection trench were measured weekly for the first month, and are now measured monthly. These results are also shown in Table 1.

The total flow volume through the system as of March 26, 1999 was 55,102 gallons of water. The average flow rate for January through March was 0.28 gallons per minute.



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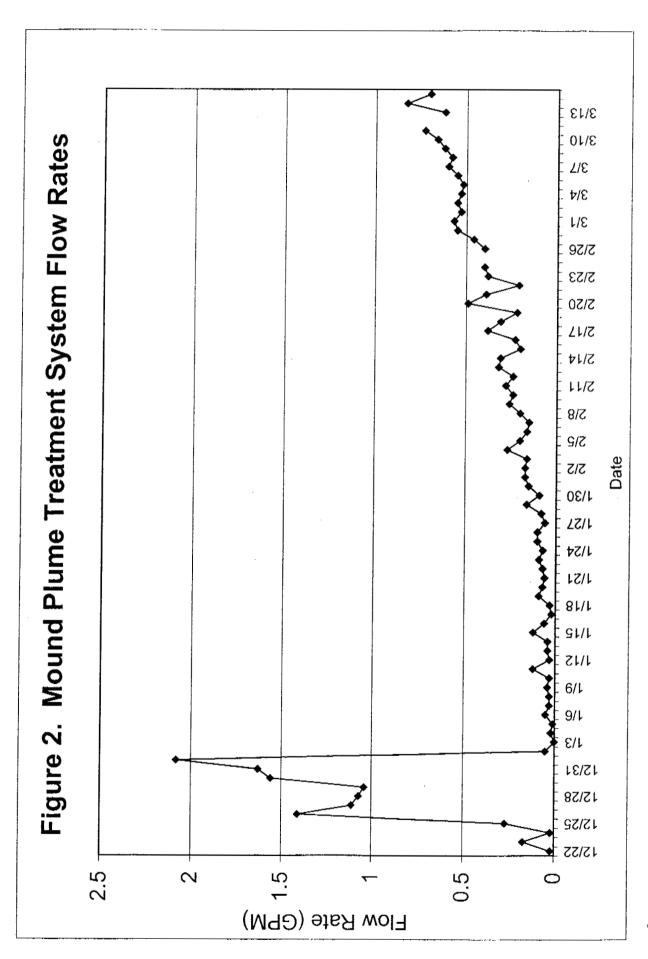


Table 1. Mound Plume Piezometer water levels (in feet below top of casing)

Table 1. Modile	i i iuiiic i i	CLOINCE	i water i	0 1 010 (111	I COL OCIO	m top c	1 000.11.5/	
Date	12/29/98	1/15/99	1/22/99	01/27/99	1/28/99	2/4/99	02/23/99	3/1/99
Trench Piezomet	ers		•					
Pl' (East)	Dry	MM	NM	Dry	NM	NM	Dry	NM
P2'	10.55	NM	NM	10.56	NM	NM	10.92	NM
P3'	7.92	NM	NM	7.95	NM	NM	8.35	NM
P4'	7.98	MM	NM	8.01	NM	NM	8.38	NM
P5' (West)	10.88	NM	NM	11.00	NM	NM	NM	NM
Collection Sump	7.07	7.00	7.04	7.10	7.07	7.12	NM	7.56
Groundwater Pie	zometers							
15199	NM	11.53	10.57	NM	11.12	10.51	NM	8.97
15299	NM	12.49	12.29	NM	12.87	12.76	NM	12.50
15399	NM	10.47	9.83	NM	10.54	9.91	NM	8.12
15499	NM	2.61	2.77	NM	2.74	2.71	NM	2.79
15599	NM	10.20	9.94	NM	10.53	10.58	NM	DRY
15699	NM	11.24	9.91	NM	10.52	9.54	NM	12.01
15799	NM	11.29	10.88	NM	11.58	11.15	NM	11.49
3586	NM	7.87	8.03	NM	7.99	7.94	NM	7.85

NM = Not measured

Samples were collected twice in December, 1998, and once per month for a total of four sampling events as of March 1999. Four sets of sample results were received this quarter and are provided in Appendix A. As of the report date, the data has not been verified or validated and a data quality assessment has not been conducted. Three sets of influent samples were collected for later statistical analysis. The first sample collected from each set is used for the following summaries. The results indicate that the volatile organic compounds (VOCs) are being removed within the first foot of reactive iron, with concentrations of trichloroethene, tetrachloroethene, and carbon tetrachloride showing significant decrease from the influent sample port to the first sample port. Concentrations of VOCs are low to non-detect in samples collected from the second, third, and fourth sample ports. Figure 3 shows the sampling locations within the treatment cells.

December 10, 1998 Sampling Event: Contaminants of concern include carbon tetrachloride, chloroform, cis 1,2-dichlorethene, tetrachloroethene, 1,1,1-trichloroethane, trichloroethene, and methylene chloride. Samples collected at the effluent from the first treatment cell show that all of these VOCs were reduced to levels below the RFCA Tier II Groundwater Action Levels at this location (see Table 2 and Figure 4).

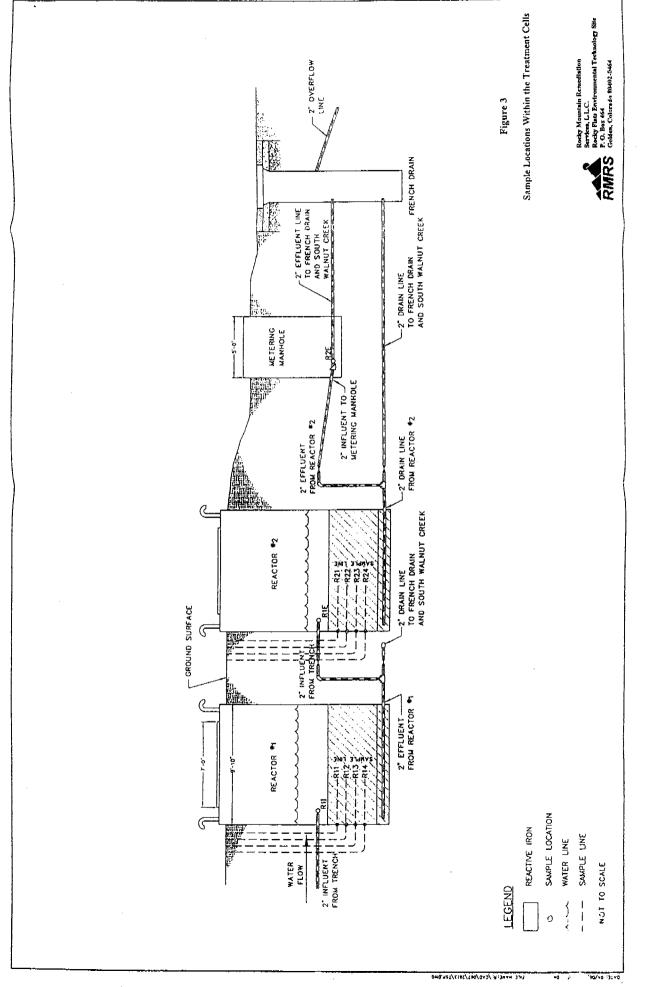
Table 2. Summary of the December 10, 1998 Sampling Event

Contaminant	Average Influent	Effluent from Reactor 1	RFCA Groundwater
· ·	Conc. (ug/l)	Concentrations (ug/l)	Tier II Action levels (ug/l)
Carbon Tetrachloride	39.5	ND	5
Chloroform	16	1.7	100
cis 1,2-dichloroethene	25	1.8	70
Tetrachloroethene	34.5	0.25 J	5
1,1,1-Trichloroethane	3.6	ND	200
Trichloroethene	65	0.39 J	5
Methylene Chloride	1.3	2.7 J	5
Total Uranium	<mda< td=""><td>0.552</td><td>10 pCi/l</td></mda<>	0.552	10 pCi/l

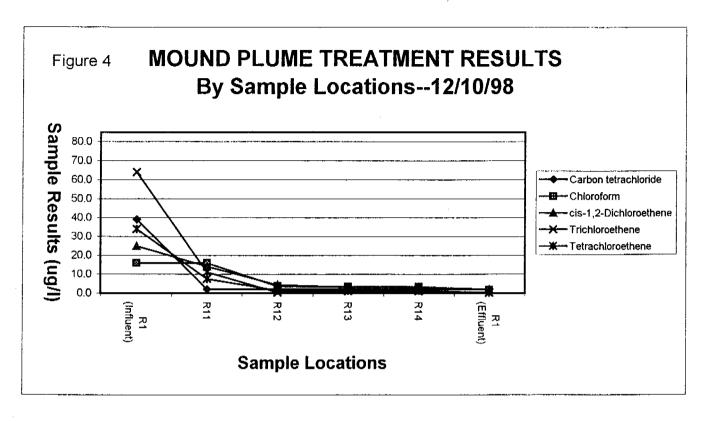
ND = Not detected at the detection limit for this analysis

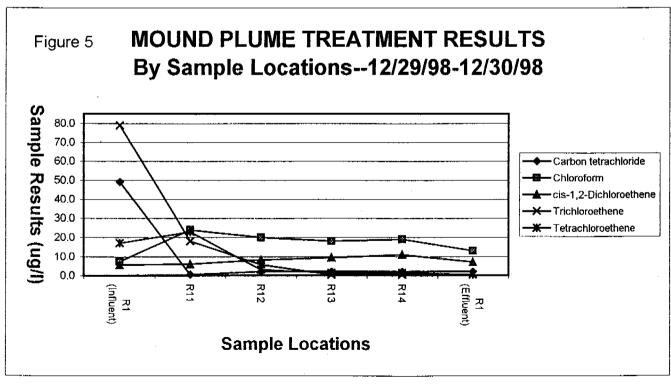
J = Detected below detection limit for analysis

<MDA = Below the minimum detectectable activity



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December 29-30, 1998 Sampling Event: All VOCs were reduced below the RFCA Groundwater Tier II Action Levels as shown below in Table 3 and on Figure 5.

Table 3. Summary of the December 29-30, 1998 Sampling Event

	Average Influent	Effluent from Reactor 1	RFCA Groundwater
Contaminant	Conc. (ug/l)	Concentrations (ug/l)	Tier II Action levels (ug/l)
Carbon Tetrachloride	49.3	ND	5
Chloroform	7.4	13	100
cis 1,2-dichloroethene	5.6	7.1	70
Tetrachloroethene	17.3	0.28 J	5
1,1,1-Trichloroethane	3.5	ND	200
Trichloroethene	19.3	0.51 J	5
Total Uranium	9.5 pCi/l	<mda< td=""><td>10 pCi/l</td></mda<>	10 pCi/l

ND = Not detected at the detection limit for this analysis

January 27, 1999 Sampling Event: All VOCs were reduced below the Groundwater Tier II Action Levels, as shown below in Table 4 and on Figure 6. However the effluent sample showed an increase from the influent concentration for methylene chloride and acetone. Acetone is a common lab contaminant, has not been encountered anywhere else in the system and is unlikely to be a treatment reaction product. Methylene chloride is found in the influent, but at a lower amount than within the effluent. Methylene chloride is also a common lab contaminant, but it also might be due to a reaction within the treatment system. Regardless of the origin, the concentrations are below action levels. It is assumed that because these are common solvents used in analytical laboratories, the levels detected are a result of cross contamination within the analytical testing lab.

Table 4. Summary of the January 27, 1999 Sampling Event

Contaminant	Average Influent Conc. (ug/l)	Effluent from Reactor 1 Concentrations (ug/l)	RFCA Groundwater Tier II Action levels (ug/l)
Carbon Tetrachloride	42	ND	5
Chloroform	12.7	0.66	100
cis 1,2-dichloroethene	22	2.6	70
Tetrachloroethene	28	ND	5
1,1,1-Trichloroethane	3.8	ND	200
Trichloroethene	57	ND	5
Methylene Chloride	0.61 J	1.8 J	5
Acetone	ND	4.2 J	3,650
Total Uranium	13.4 pCi/l	0.132 pCi/l	10 pCi/l

ND = Not detected at the detection limit for this analysis

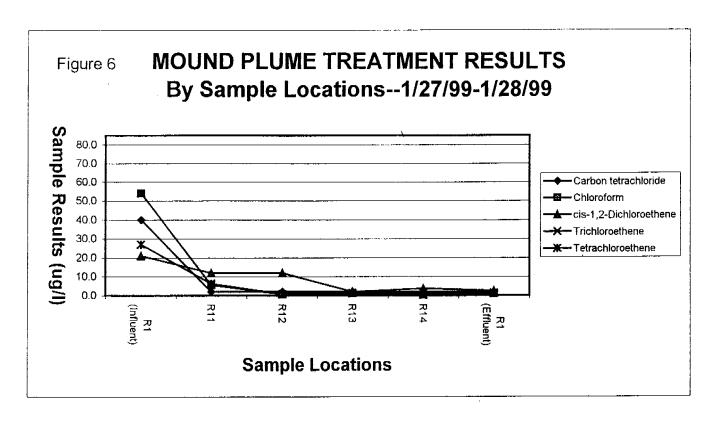
February 23, 1999 Sampling Event: All VOCs were reduced below the Groundwater Tier II Action Levels, as shown below in Table 5 and on Figure 7. However the influent sample contained acetone and methylene chloride and these were also detected in the blank sample run by the analytical lab. While the effluent sample also showed an increase from the influent concentration for methylene chloride, both acetone and methylene chloride were also detected in the blank sample run by the lab for the effluent samples. These contaminant concentrations are below action levels, and are most likely to be from contamination within the analytical testing lab.

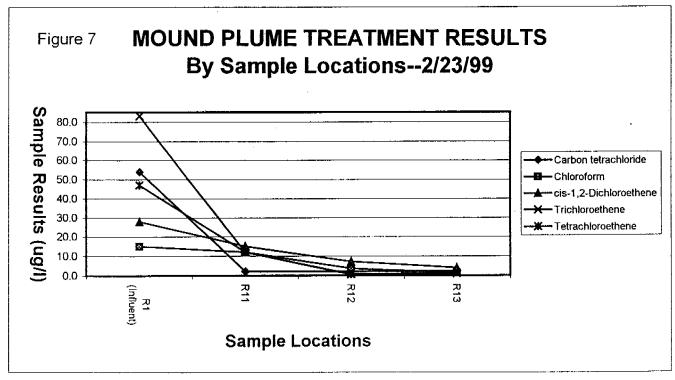
J = Detected below detection limit for analysis

<MDA = Below the minimum detectectable activity

J = Detected below detection limit for analysis

B = Contaminant also detected in analytical lab blank, indicating possible lab contamination.





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Table 5. Summary of the February 23, 1999 Sampling Event

Contaminant	Average Influent	Effluent from Reactor 1	RFCA Groundwater Tier II
	Conc. (ug/l)	Concentrations (ug/l)	Action levels (ug/l)
Carbon Tetrachloride	54	ND	5
Chloroform	15	1,4	100
cis 1,2-dichloroethene	28	4.0	70
Tetrachloroethene	47	ND	5
1,1,1-Trichloroethane	4.9	ND	200
Trichloroethene	83	ND	5
Methylene Chloride	1.5 JB	4.7 JB	5
Acetone	12 JB	1.4 JB	3,650

ND = Not detected at the detection limit for this analysis

CONCLUSIONS

The Mound Site Plume Treatment Project is fully operational and treating contaminated groundwater to below the specified system performance requirements. Ongoing maintenance, raking the iron filings and retrieving flow rate and water level data, are the only required activities. Sampling will continue at regular intervals to verify the performance of the treatment system. For the next quarter, April through June 1999, no changes in the system are expected.

REFERENCES

DOE, 1996, Final Rocky Flats Cleanup Agreement, Rocky Flats Environmental Technology Site, Golden, CO, July.

DOE, 1997, Final Mound Site Plume Decision Document, RF/RMRS-97-024, September.

J = Detected below detection limit for analysis

Table 3. Mound Plume Treatment System Analytical Results (Preliminary) in ugA

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	£	(Influent)	1000	op of Reactor 1	Top of f	or Reactor 1	740	Tdo Blank	Reactor 1 Sample Line		Reactor 1 Sample Line		Reactor 1 Sample Une	Reactor	Reactor 1 Sample Line		Reactor 1 Comple
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Sample Number	ETI-R11:	ETI-R11.S-01-121098	TT.	FTI-841-C 00 101000		06.0		12/10/98	12/10/98	+	12/10/98	12	12/10/98		12/10/98	7	12/10/98
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Parameter	Result	Cimit	Result	Limit	Recuit	Celection		Detection	Detection		Detection		Detection	1	E11-R12-S-01-121098	ETI-R13	ETI-R 13-S-01-121098
Acetone	Q	20.0	Q	20.0	Q	20.0	LIDS AV	Limit	=	-	Result Limit	Result	Limit	Recili	Defection	å	Detection
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Bromomethane	8	0.7	Š	2 4	2 2	0.7	Q	1.0	ON 1.0		,	2 2	0.0	2	1.0	2	1.0
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Carbon letrachloride	33	5	9 6	2.6	2 4	2.0	2 :	0.	Q.			2 2		2 9	5.0	2	5.0
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trans-1,2-Dichloroethene	3 5	4.4	9 9	2.4	25	2.4	2	2		_	5.5	č.	1.0	0.29 J	1.0	0.22	0
1.2-Dichlomethene (total)	§ 8	0.6	2	0.1	ð	1.0	Q	. 0	Z CN	_		£.	1.2	4.3	1.2	3.1	
1.2-Oichlomomoane	3 5	0.7	53	2.0	23	2.0	2	0				Q.	0.5	ģ	0.5	S	5.0
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Table 3. Mound Plume Treatment System Analytical Results (Preliminary) In ug/l

12/100 1/2/1	<u> </u>	12/29/99 ETI-R11-5-01 Result Limit ND 100	12/29/98 ETI-R1ES-02	12/29/98				-	
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ND 20 ND	2.0		ND 2.0		2 CN		0.1	2	1.0
ND 120 ND 0.25 J ND 0.29 J 1.2 0.25 J	5.0					2.0	2.0		2.0
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ne ND 50 ND 27J ND ND 100 ND ND ND 100 ND ND ND 100 ND ND ND ND ND 100 ND	0.		2 5	0 0				2	0.0
No	5.0		-	2 2	0.0	0.1		Q	0.1
ND 5.0 ND ND 1.0 ND ND ND 1.0 ND ND ND 1.0 ND ND ND 1.0 ND ND ND ND ND 1.0 ND	_	_							5.0
NO NO NO NO NO NO NO NO	5.0	NO 5:0	ND 5.0			5.5.0		_	5.0
ne ND 1.4 0.25 J hane ND 1.0 ND hane ND 1.0 ND hane ND 1.0 ND	0. 0	9.5	-					2 2	0.0
ND 1.0 ND	. .				0N 0.1	02			9 6
hane ND 0.8 ND ND ND 1.0 ND 0.18 ND 1.0 0.39 J 0.18 J 1.1 ND ND ND 1.0 ND			- '			ON 4.1	_		9 9
hane ND 1.0 ND 0.39 J ND 1.0 0.39 J ND 1.0 0.39 J ND 1.0 ND ND 1.0 ND ND 1.0 ND ND ND 1.0 ND	90		0. c						0
0.18 1.1 ND 1.0 0.39.1 ND 1.0 ND 1.0 ND ND 1.0 ND ND 1.0 ND	0	- CN		3.5					0.8
0.8 J 1.1 ND	0		- •	000	0.1	0,1 0,1			1.0
ND 1.0 ND nuclide Result Error/MDA Result	_	-			0.1	ON OT	0.51 1.0		0
Result Error/MDA Result	1.0		200	200			0.27 J 1.1	0.28.J	Ξ
Result Error/MDA Result				0	0.1.0	0.1	0.1 dN		10
	4	Result Error/MDA	Result Error/MDA	Result Error/MDA	Recill Free MIDA				
1.80 10-27	7.42 10"2/	1.28 /	l			Result Error/MUA	Resull	Result	Error/MDA
ital Uranium (pCi/l) 1.33 10°1 7.29 10°2 5.52 10°1 7.29 1	7.29 10*	9.5 7.29 10.2	9.66 7.29 10*2	221102 720102		•	_		5.54 10.3/
						1.17.10 7.29.10	3.18 10" 7.29 10"	1.98 10-7 7.29	7.29 10-2

Table 3. Mound Plume Treatment System Analytical Results (Preliminary) in ug/l

## 12729/98 12239/98	E 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1279998 ETI-R14-5-01 Detection Pesult 2.1 10.0 0.18 J 1.0 ND 1.0 ND 2.0 1.2 J 50 ND 1.0 ND 2.1 ND 1.0 ND 1.0	ETI-R10_S_01-12789 ETI-R10_S_01-12789 ND	1/27/99	Result Lin Defer 1/27/99 ETLR10-S-03-12 Defer Lin Defer	ETI-RIOT-01-12899 Result Detection ND 10.0 ND 1.0 ND 1.0 ND 5.0 ND 6.0	ETT-R10-F-01-12799 ETT-R10-F-01-12799 ND	100 100 100 100 100 100 100 100 100 100
Percentage ETHR11-S-03 E	ETJ-R1: Result Result NO O 22 2 O 22 2 NO NO NO NO NO NO NO NO NO N	Result Limit 2.1 100 0.18 J 1.0 0.18 J 1.0 0.18 J 1.0 0.18 J 1.0 0.0 0.10 0.0 0.0 0.0 0.0 0.0 0.0 0.	<u>v</u>		Result 1978	Result High Strain Control of the Co	Result N N N N N N N N N N N N N N N N N N N	100 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
No.	Result NO	Result Limit 2.1 100 0.18 J 1.0 0.18 J 1.0 0.18 J 1.0 0.18 J 1.0 0.10 0.10 0.10 0.10 0.10 0.10 0.1			8	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2	Detection 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.
No.	Result 0.22 J 0.22 J 0.22 J 0.22 J 0.22 J 0.23 J 1.1						2	100 100 100 100 100 100 100 100 100 100
ND 100 ND	0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						99999999999999999999999999999999999999	100 1.0 1.0 1.0 2.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
NO 1.0 NO	0.22					, , , , , , , , , , , , , , , , , , , ,	99999999999999999999999999999999999999	200 200 200 200 200 350 350
NO 110 NO 110 NO 100 NO							9999999999999	2 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
ND 2.0 ND	S S S S S S S S S S S S S S S S S S S						99999999999	2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2
NO 5.0 NO	S S S S S S S S S S S S S S S S S S S				ળ – તેળ તેળ ને ળે તે	,, ,,	9999999999	2 7 7 7 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
NO 10	S S S S S S S S S S S S S S S S S S S				<i>–</i> તેળે તેળ નિંજો તો		9999999999	20 - 21 - 22 - 23 - 23 - 23 - 23 - 23 - 23
0.49 2.15 5.05 2.10 NO NO NO NO NO NO NO N	2 2 2 2 4 2 2 6 6 7 7 8 6 6 7 7 7 8 6 6 7 7 7 8 6 6 7 7 7 8 8 6 7 7 7 7				તાં જો જો ≓ જો જો		<u> </u>	2.2.0 2.2.0 0.5.0 0.5.0
ND 10 NO 10					ાં લંલ ન ં લંલ		<u> </u>	2,4 2,0 0,0 8,0
ND 20					با برنا شيا برا		999999	2.0
NP 2.0 2.0 NP 2.0					તં ન ે જો જો		2222	0.50
ND 2.0 ND 2.0 ND 2.0 ND 0.55.1 1.0 ND 0.55.1 1.0 0.33.1 0.33.1 1.0 0.33.1 1.0 0.33.1 1.0 0.33.1 1.0 0.33.1 1.0 0.33.1 1.0 0.33.1 1.0 0.33.1 1.0 0.33.1 1.0 0.33.1 1.0 0.33.1 1.0 0.33.1 1.0 0.33.1 1.0 0.33.1 1.0 0.33.1 1.0 0.55 ND 0					نه زما		2 2 2 2	0
ND 1.0		-			6		2 2 2	
0.555 1.2 0.384 1.2 0.77 J 0.555 1.10 0.384 1.12 0.77 J 0.574 J 1.0 0.21 1.10 0.33 J 0.575 J 1.0 0.984 1.10 1.0 0.33 J 0.575 J 1.0 0.984 1.10 1.0 1.0 0.00 0.00 0.00 0.00 0.00					•		9	0.0
0.24 J 1.0 0.21 J 1.0 0.33 J 0.33 J 0.34 J 1.0 0.34 J 1		•			1.9.1	2		
1.0		•			6	N	2	9
1.2 2.8					2	ON.	2	0
10	4.0	1.2		21 3.0		NO 12	9	. 5
NO 1.0 NO	₽:				ND 1.2	_	2	0.5
N N N N N N N N N N N N N N N N N N N	1.0 8.8 1.0		21 2.5	21 2.5	24 2.5		2	0.
ND 1.0 ND	2 9				ND 2.5	0.1	2	1.0
ND 1.0 ND 1.0 ND 1.4 ND 1.0 ND	2 5	2 2				Q.	2	1.0
ND 5.0 ND 5.0 ND 5.0 ND 6.06 J ND 6.06 J ND 6.06 J ND 6.0	2				ND 2.5		2 :	0.5
No.66 J 5.0 ND 5.0 14.3 5.0 ND 5.0 14.3 5.0 ND 5.	2				4 -		2 9	0.0
ND 1.0 ND 5.0 ND 5.0 ND 1.0	1.5.1	1.5.1 5.0	0 60 J 12	0.62 J 12			2 5	9 0
retrachloroethane ND 1.0 ND 1.	2		ND 12				9	0.50
proethere 23 14 18 14 14 14 14 14 14 14 14	0.1 ON 0.1	_	2		ND 2.5		ģ	1.0
NO 1.0 NO 1.0			ND 2.5	NO 2.5	6		욷	1.0
		2 5	27	6.5	roi e		9 :	*
1.9 0.8 3.5 0.8	0.8 0.27.J 0.8	_	4 (3.6	200	2 5	2 9	0.0
hane ND			25	25.5	10		2 5	0 0
ne 19 1.0 20 1.0		0.35 J 1.0	· 7	54			2 5	9.5
0.29 1.1 0.30 1.1 0	· ,	0.32 J 1.1	NO. 2.8	ND 2.8	۱۸		2 5	2 :
Xylenes (total) ND 1.0 ND 1.0	0.1 ON 1.0	0.1.	ND 2.5	ND 2.5	NO 2.5	0. 0.1	5	9
Result Error/MDA Result	Result	1	Result Errar/MDA	Result FrorMina	Retuit FrontMDA	A Date:: Front&DA	Deput	Cornelland
4,74 10 ⁻³ / 2.10 /		3.32 10.37				line and	Nesqui	10000
Total Uranium (pCut) 2.10 10 ⁻² 7.29 10 ⁻² 9.49 7.29 10 ⁻² 1.39 10 ⁻² 7.29 10 ⁻²	7.29 10" 1.80 10" 7.29 10"	1.18 10-2 7.29 10-2	12.4 7.29 10.2	13.4 7.29 10.2	50		1 92 10.2	7 20 10-2

6

Table 3. Mound Plume Treatment System Analytical Results (Preliminary) in ug/l

	Reactor 1 Sam R11	nple Line	Reactor 1 Sample Line Reactor 1 Sample Line R11	pte Line R	teactor 1 San R11	Reactor 1 Sample Line Rea	Reactor 1 Sar R12	mple Line	Reactor 1 San R13	ctor 1 Sample Line Reactor 1 Sample Line Reactor 1 Sample Line R13 R13	Reactor 1 San R14	ample Line	Reactor 1 (Effluent)	(Effluent)	Reactor	Reactor 1 (Influent)	Reactor 1 (Influent)	(Influent)	Reactor 1 (influent)	(Influent)
Location/Date	1/27/99	6	1/27/99	+	1/27/99	19:9	1/27/99	8	1/27/89	66	1/27/99	66	1/28/99	66/	212	2/23/99	2723/99	66	2/23/99	36
Sample Number	ETI-R11-S-01-12799	.12799	ETI-R11-S-02-12799	12799	ETI-R11-S-03-12799	03-12799	ETI-R12-S-01-12799	11-12799	ETI-R13-S-01-12799	01-12799	ETI-R14-S-01-12799	01-12799	ETI-R1E-S-01-12899	-01-12899	ETI-R10-S	ETI-R10-S-01-022398	ETI-R10-S-02-022399	2-022389	ETI-R10-S-03-022399	03-022399
Parameter	- tinsed	Defection	A Security	Detection		Detection - Indi		Detection		Detection		Detection		Detection		Detection		Defection		Detection
Acelone		500		+	LINESON CITY	100	ineault.	Į,	Result	Ē	Kesuit		Result	Ē	Result	Çait	Result	<u>=</u>	Result	Ę
Regress	9 9	2 -	2 9	2.0	2 2	2 .	2 9	2 ,	2 9	9,0	2 :	0.0	4.2.)	10.0	12 JB	20	2.5 JB	50	2	20
Drawedistion	9 9		2 9	. ·	2 5	2 9	2 9	2 .	⊋ !	0.	S.	0.	Ş	0	Q	5.0	2	5.0	Q	2.0
Bromodanioromemane	2 9		2 9	0.0	2 :	0 !	2	9.	2	1.0	2	0.	9	0.1	Q	5.0	2	2.0	2	2.0
orongonia orongonia	2 9	- 0		0.6	2 !	0.1	2	0.	2	1.0	S	0	2	0.	Q	5.0	2	2.0	2	2.0
bromometrane 2 billions with	2 9	0.0		2.0	2	2.0	2	2.0	9	5.0	2	5.0	Š	2.0	Q	5	9	0.4	9	0.4
Z-butanone (MEK.)	2 9	0.0		0.0	2	0.5	2	0.0	9	5.0	2	0.0	2	5.0	5.0 J	25	2	₽	02	10
Carbon distullide	2 5			1.0	2 :	0.	2	0.	2	1.0	ð	9	2	1.0	Q	5.0	9	2.0	9	2.0
Caroon legachiones	2 9	- 0	2 9	7.7	2 :	- 5.1	2 !		9	2.1	2	2.1	Š	2.1	54	0	55	5.7	22	4.2
Chlomothana	<u> </u>	2 0		9 6	2 9	D (2 :	0.6	<u>9</u> !	1.0	2	0	2	1.0	Q	5.0	9	2.0	Q	2.0
Chloroform) ¢	0.0		2.0	2 8	0.0	2 :	5.0	2	2.0	2	5.0	2	5.0	9	ę	9	0.4	9	4.0
Chlomorethan	3 4	9 6		0.0) (0.6	9 9	o (0.41	6.5	4.00	0.5	99.0	5.0	15	2.5	7	1.0	4	0.1
Difference	2 2	0.7		0.7	2 9	0.6	2 :	5.0	9	2.0	2	2.0	2	5.0	2	₽	2	0.4	9	4.0
1 Dishlomothan	2 5	2 ;	•		2.	2.5	2 ;	9.0	2 :	0.1	Q.	9	2	0.1	2	20	2	2.0	9	2.0
1.0 Cichionothon	4.7	4 5			4.7°	7.	8) T	7.		1.2	0.99 J	2	0.69 J	7.	1.8.1	90	1.7.	2.4	1,7,1	2.4
1,z-Dichlordernane	4.	5.0			0.483	0.	0.37	0.	0.25 J	1.0	0.26 J	0.1	0.22 J	0	Š	5.0	0.52 J	2.0	0.50 J	2.0
1.1-Dichlordemene		0.0		D.C.	E	9.	99	0	9	1.0	0.33 J	0.1	2	10	5.6	5.0	5.5	2.0	58	2.0
ck-1,2-Uichioroethene	2 5	 		5.2	2 5	7 7	2	7.	2.0	5.	3.7	1.2	2.6	1.2	28	6.0	27	2.4	27	2.4
vans-1,2-Uchorooenene	5 5	0.0		6.5	Q.	0.5	9.0	9.0	9	0.5	2	0.5	Ñ	0.5	2	2.5	9	1.0	Ş	1.0
1.2-Dichioroemene (total)	2 5	. ·		0.0	7	0.1	2	0.	2.1	0.1	8) (6)	0.1	2.7	0.1	28	5.0	27	2.0	27	2.0
or 1.3 Dishlomorphy	2 5	2 9			2 :	2 (2 !	0.	2	0	2	1.0	2	0.1	2	5.0	9	2.0	9	2.0
trans.1 3-Dichloropopopo	2 5	2 0	5 5	5.5	2 9	2.5	5 5	0.0	2 !	0, 9	2 :	0	2	0.1	S	5.0	9	2.0	Q 2	2.0
Ethylponeses	2 5	2 5		2 5	2 9	2 (2 5	0.0	⊋ !	0.7	2	0	9	0.1	2	5.0	2	2.0	<u>Q</u>	2.0
2-Hexanone	2 5	0.00		- u	2 5	- 4 - C	2 9) c	2 9	9.5	2 5	O 0	9 5	0.7	2 :	2.0	윤 :	2.0	2	2.D
Methylene chloride	3.3 J	0		5.0	29.7		30.1	2 4	27.	9 6		3 C	₹.	9 0	2 2	8 2	2 5	2 9	2 ;	₽!
4-Methyl-2-pentanone	9	5.0	2	5.0	2	5.0	2		Š	200	?	9 6	2	 	0.00	6 4	20.20 JB	2 \$	80 K	2 9
Styrene	9	0.1		0.1	9	0.	9	1.0	9	10	2	0	2	0.	2	0 5	2 5	2 6	2 2	2 6
1,1,2,2-Tetrachloroethane	2	9.		0,1	Q	0.	2	0.5	2	1.0	2	0.	2	0,1	2	5.0	9	2.0	É	200
Tetrachloroethene	6.4	4.		4.	6.2	4.	0.81 J	4.	9	4.	9	4.	9	4.4	47	7.0	84	2.8	150	2.8
Ioluene	2 !	0.0		0.	2	0.1	9	0.	ę	0.	2	0.	9	1.0	Ş	5.0	2	2.0	2	2.0
1,1,1-Inchloroethane	5 5	8.0		8.0	2	8.0	2	9.0	Ş	8.0	2	9.0	₽	9.0	6.4	0.4	6.4	1.6	6.	1.6
Tartiment Tartiment	2 5	2 .		D (9 1	0.	2	0.	9	0.1	9	<u>.</u>	2	1.0	Q		2	2.0	g	2.0
Transferrence	9 0			- ·	ه د خ	0.1	0.64	0.5	2	0.	0.23	0	9	0.	63	5.0	94	2.0	98	2.0
Virial Griding	2 9	_ (2 9		2 !	- :	9	- -	2		9	-	2	-	å	5.5	Ŷ	2.5	ĝ	2.2
Aylenes (total)	2	<u></u>	ğ	D.	Đ	0.	2	0.	2	9	9	9.	2	1.0	õ	5.0	Ş	2.0	ĝ	2.0
Radionuciide	Result Err	Error/MDA	Result Erro	+	Result	Error/MDA	Result Er	Error/MDA	Result	Error/MDA	Result	Error/MDA	Result	Fron/MDA	Recult	FrortMDA	Bosnit	Frontiana	Decret	Error/MD A
						5.80 10'37		2.70 10.37		3.70 10-2/		2.60 10-3/		1.80 10 27			1		1	
Total Uranium (pCIA)	1.41.10-2 7.	7.29 10-2	1.83 10-2 7.2	7.29 102 2	2.56 10*	7.29 10-2	9.61 10 ³ 7	7.29 10*	2.74 10"		1,11 10"	7.29 10 2	1.32 10"	7.29 10.2						
				1																

Table 3. Mound Plume Treatment System Analytical Results (Preliminary) in ug/l

Page 5 of 5

Reactor 1 Sample Line Reactor 1 Sample Line Reactor 1 Sample Line Reactor 1 Sample Line R11 R11 R11 R11 ETI-R13-S-01-022399 Detection 2/23/99 2/23/99 No. 26 Jan. 19 ETI-R11-S-03-022399 Detection 2/23/99 2/23/99 ETI-R11-S-01-022399 Detection 2/23/99 ETI-R10-T-01-022499 Trip Blank 2/23/99 Syrene 1,1,2,2-Tetrachloroethane Tetrachloroethene dis-1,3-Dichloropropere Trans-1,3-Dichloropropene Ethybenzane 2-Hexanone Methylene chloride 4-Methyl-2-pentanone Chloromentane
Dibromochioromethane
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethane
1,1-Dichloroethane
1,1-Dichloroethane
1,1-Dichloroethane
1,2-Dichloroethane
1,2-Dichloroethane
1,2-Dichloroethane
1,2-Dichloropropane
1,2-Dichloropropane
1,2-Dichloropropane Acetone
Benzene
Bromodom
Bromodom
Bromomethane
Bromomethane
A-Bulanone (AREK)
Garbon disulinde Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane Trichloroethene Vinyl chloride Xylenes (total) Radionuclide Fotal Uranium (pCi/l) Sample Number Location/Date arameter

11/1